

## Excavations on Ponui Island

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### Introduction and Setting.

This report analyses further results from a series of excavations carried out at site N 43/1 on the south coast of Ponui Island in the years 1956, 1957 and 1959, described in the preceding section by Mr. V. F. Fisher. A preliminary report is already available (Nicholls 1963) and may be consulted for other details and additional drawings of artefacts. Ponui Island which lies in the Hauraki Gulf just south of Wai-

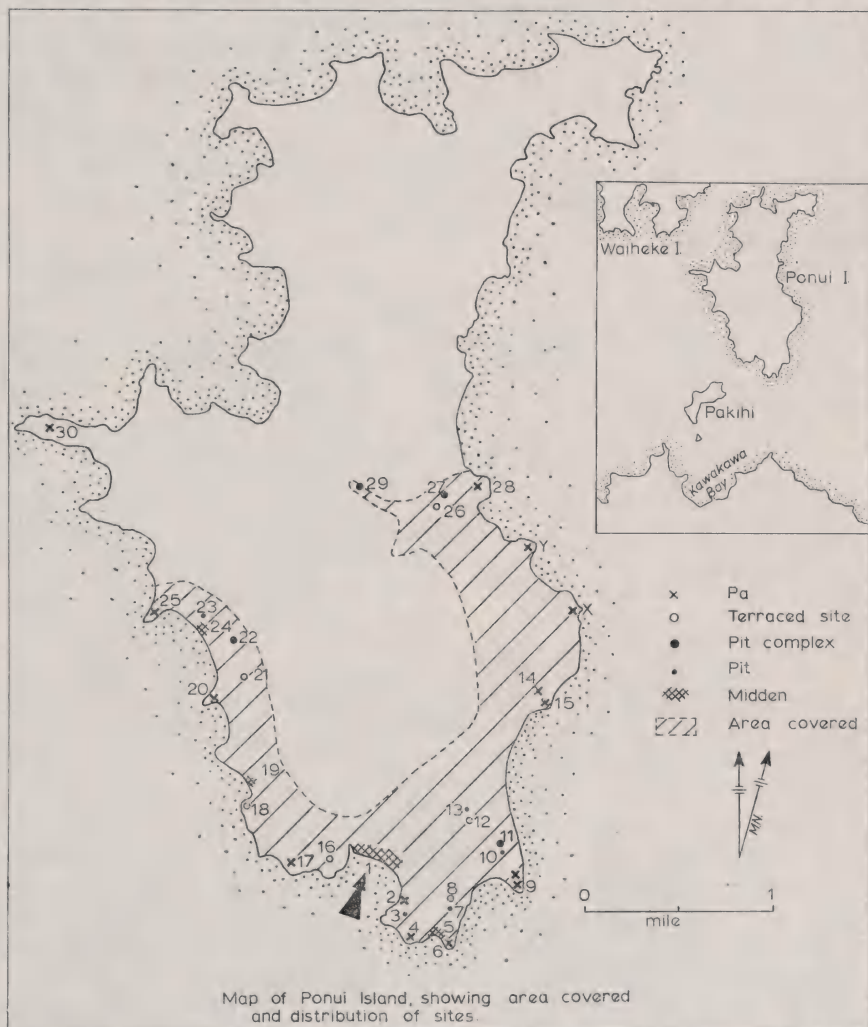


Fig. 1—Map of Ponui Island showing location of N 43/1 in relation to other recorded sites in the area covered by survey.

heke Island (Fig. 1), covers an area of about nine square miles. In the main it is fairly hilly so that the site of these excavations is one of the few areas of flat land available on the island. The site, itself, is situated near the tidal estuary of a stream which flows out on the western side of the bay. The eroding banks of the stream have from time to time cut through a number of *haangi* and other signs of occupation. To the east of site N 43/1 is an old creek bed, beside which is a large midden, comprised mainly of *Chione stutchburyi* and *Amphidesma australe*. Further middens are evident in many places on this area of flat land, but their relationship to site N 43/1 is not known.

At low tide extensive mudflats are uncovered off the bay, and cockles (*Chione stutchburyi*) pipi (*Amphidesma australe*) and the Auckland rock oyster (*Saxostrea glomerata*) are today found here in large quantities. Snapper, *kahawai*, flounder, dogfish, piper, stingrays and herrings are reported to be numerous in the waters surrounding the island. (Trower n.d.).

There is evidence of heavy settlement on the island, with *pa*-sites on many of the headlands. The results of a partial survey of these sites, published by Davidson (1963), are indicated in the accompanying map.

### Historic Details.

Graham (1943 p. 64) gives the original name of Ponui Island as "Te Pou-nui-o-Peretu."

On the 16th June, 1853, two Maori chiefs, Karamu and Kupenga, sold their rights on Ponui to the New Zealand Government for £100. On the 4th January of the following year, Ngatai and Hori Pokai, chiefs of the Ngaati Hua and Ngaati Paoa, sold their interests for the sum of £25, and further agreed to take all their pigs from the island, and give up cultivation and dispose of their potato crop. While the archaeological evidence discussed below is suggestive of these events, it is not known historically whether any of this cultivation took place on the bay where the present site is located. Mr. Fred Chamberlin, grandson of one of the Chamberlin brothers who purchased the island in 1854, states that as far as he is aware, no buildings or other structures ever stood on the site, and that since the land was originally put into pasture it has been ploughed several times. However, he also states that the island was the scene of intensive operations on the part of the gum diggers some time last century, and these operations could easily have involved the area of the site.

### The Excavations.

Digging by Bell and Fisher commenced in February, 1956, with two test excavations, 5 ft. square (fig. 2). They were later extended into the area which appeared to be the more promising from the results of the test square. The general location of the site was determined from indications of refuse in the eroded bank of the stream nearby. This area was laid out on a five foot grid, without baulks, and each square excavated in a series of six inch levels. The material recovered was bagged according to square and level. In two succeeding years, Fisher returned to the site, accompanied by a group of students from the Ardmore Teacher's Training College. During these two years a record was kept of the position of most artefacts in relation to the grid, and their depth from the surface, but the system of six inch levels was not retained.

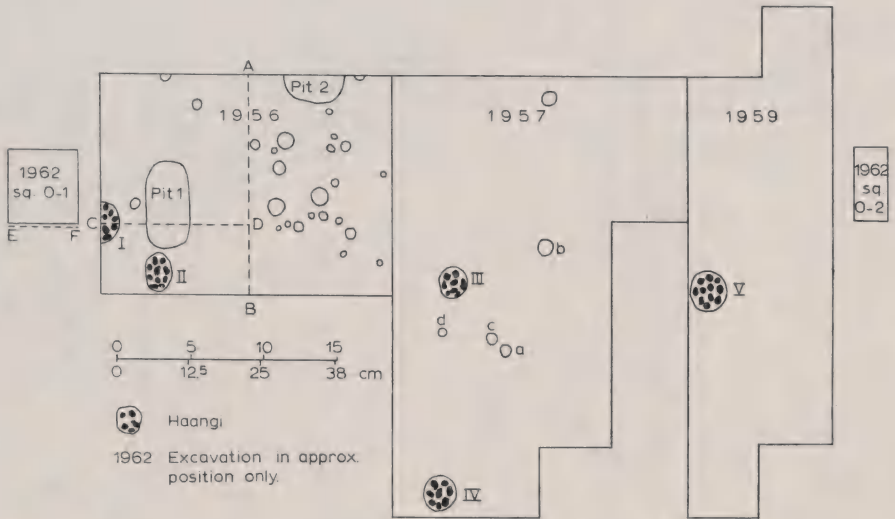


Fig. 2—Map of principal excavations in 1956, 1957, 1959 and 1962 showing distribution of recorded features.

Non-artefactual material was kept separate according to square only. There is, therefore, no indication as to what level or layer this latter material comes from, and consequently for the purpose of this report, reference to all material apart from the artefacts and identified bone is to material recovered in 1956 only. Also, in the absence of records as to the layer of origin of the material much of the following analysis has had to be statistical. To a limited extent this has been checked by a small excavation carried out on a weekend towards the end of 1962.

In order to examine the statistical significance of the distribution of this material, the chi-square test was employed wherever a sufficient quantity of any one type of material was recovered. The results of these tests (shown under the chi-square column of Table I) indicate that the distribution of most materials is not random. It has therefore been inferred that the apparent association between a material and the level where it occurs most frequently is significant.

The first season's excavations revealed a cultural deposit some 18 inches in depth. On the surface lay a dark humus and turf zone designed as layer I. Underneath this was a thick zone of gravel and sand containing some shell called layer II, and under this again lay a thinner dark organic layer, also containing shell. This lowest layer, III, rested conformably on the undisturbed sub-soil (fig. 3), and was of a limited extent, fading out toward the west, but continuous over the rest of the site. Pit I, and haangi I and II and possibly haangi IV as well, were apparently cut from the top of layer III (fig. 3), as probably were some of the postholes. The location in the stratigraphy of the other structural features is not known. However a posthole (fig. 2), containing the remains of timber, suggests that some may not have been very old. This posthole was also ringed with stones. It is not clear whether or not these features, which appeared mainly during the 1956 excavations, were the only ones indicative of structures. The soil composition of both layers II and III was sandy and gravelly, with a fairly

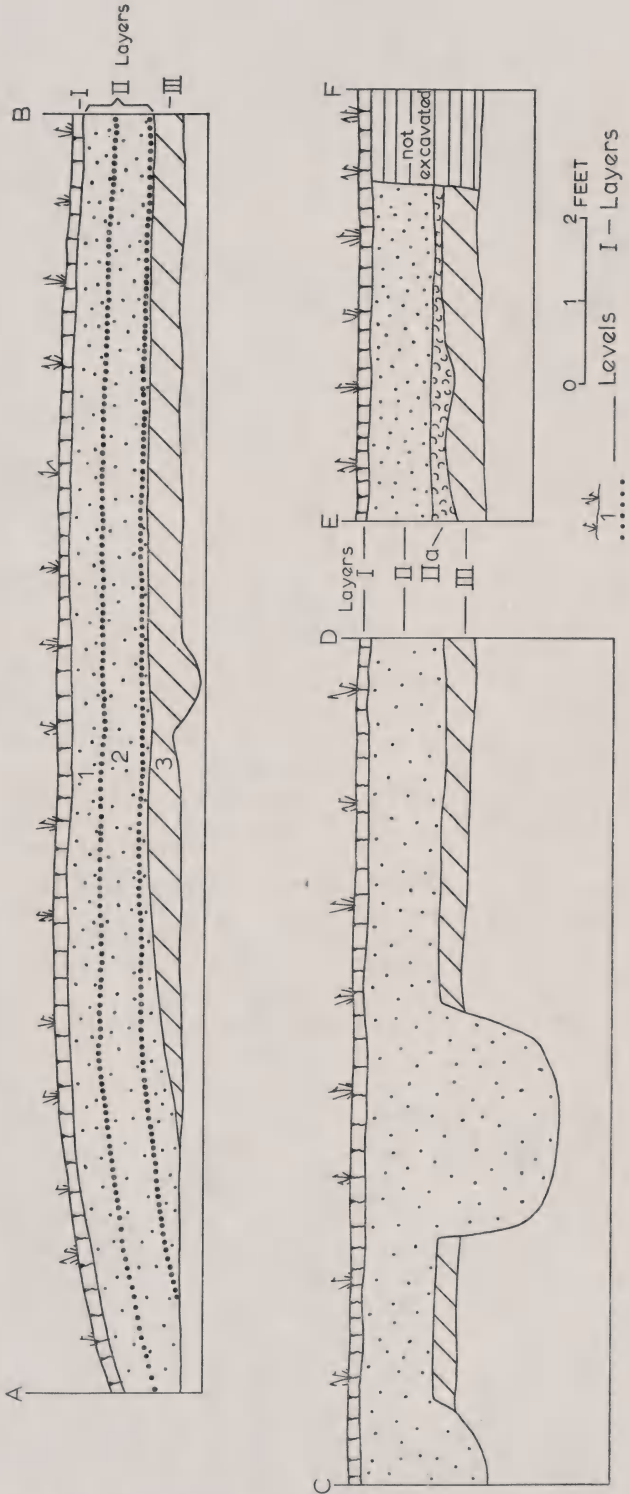


Fig. 3—Stratigraphic cross-sections showing layers at three selected points across excavated areas. In section A-B the levels are superimposed on the layers.



high charcoal content. Layer III seems to have been rather more dark and greasy. The artefacts appear to have been scattered through both layers in a random fashion, and there is no evidence of occupation floors. In fact, the very homogeneous mixture of soil, sand, charcoal, shell fragments, bone and artefacts suggests that there has been much disturbance since the artefacts were first discarded. During the excavations carried out in 1962 a thin, discontinuous and almost sterile layer of beach gravel and broken shell was found between layers II and III (fig. 3).

As the section drawings show the top of layer III is approximately 12 inches from the surface, and thus roughly coincides with the third six-inch level from which material was collected in the excavations. Thus, one may expect that material from levels I and II will come from layer II, and that material from level III may be identified with layer III. However, this can be an approximation only as layer III fluctuates somewhat in depth and intrusions may be expected where pits and post-holes have been dug from the top of layer III.

After the material recovered had been sorted according to level, the percentage of that material occurring in each level has been recorded in Table I. It will be seen that while stone artefacts appear in all levels, by far the greatest percentage falls in level I, apart from the chert flakes, which appear to be more numerous in level II. On the other hand almost the entire amount of fish bone comes from level III as does most of the porous whale or seal bone. The dog bone and bird bone shows a slightly different distribution, coming in almost equal quantities from levels II and III, with only a slight amount from level I. Mr. R. J. Scarlett, who identified some fragments of bone as *Dinornis*, states that although some of this bone is subfossil, other pieces appear to have been broken while fresh. Other bird bone includes albatross, shag, *weka*, pigeon, *tui* and duck, whose distribution by level is indicated in Table II. A number of pieces of pig bone have also been tentatively identified, and these pieces occur predominantly in level I, with a few fragments in level II. This distribution coincides with that for other European contact materials: china, copper nails, and clay pipes, approximately 80 per cent of which occur in level I, with the remainder in level II.

Although it is not possible to draw too many conclusions from this analysis, it does seem that a general picture emerges, in which bone material occurred predominantly in the bottom layer of the site, with stone material becoming more frequent on the upper layers. The distribution of stone flakes, roughouts, and adze flakes coincides to a certain extent with that of the European material, but in all cases there is not the high concentration of material in level I that occurs with the European material, and the stone artefacts occur at depths beyond those reached by the pipes and china. This seems to suggest that the occupation that was responsible for the stone flakes and other stone material was not identical with that which provided the European contact material despite a roughly similar distribution.

Obsidian flakes show a change in material from predominantly green to approximately an equal distribution of green and grey types when held to transmitted light, as one moves from the lower to the higher levels. This agrees with Green's (Green and Shawcross 1962) suggestion of a change from green (Mayor Island) obsidian, to other sources of

obsidian, in the cultural sequence for the Auckland Province. Samples of the obsidian have been subjected to the dating techniques described by Ambrose and Green (1962). Unfortunately the surfaces of many of the obsidian flakes have been badly scratched at some stage, which made accurate readings for all pieces or surfaces impossible, and it has therefore not been possible to differentiate between the layers or levels on this basis. In general, however, hydration rims with a minimum thickness comparable to those of level IV at Skipper's Ridge (N 40/7) or period 2 of the Kauri Point pa (N 53-54/5) are to be observed, while some surfaces give earlier readings equal to layer B of the Opito site (N 40/3) or level III and fill of level I features at Skipper's Ridge.

The following shells have been identified:

*Pecten novaezelandiae* (queen scallop), *Lunella smaragda* (cats eye), *Glycymeris laticostata* (dog mussel) *Mytilus canaliculus* (common mussel). *Cookia sulcata* (Cook's turban) *Amphidesma australe* (pipi) *Chione stutchburyi* (tuangi) and *Cabestana spengleri* (Spengler's trumpet).

All this shell was very worn, and each species is represented by only one or two examples, apart from the samples taken during the 1962 excavations.

The samples collected from the 1962 excavations and analysed by J. M. Davidson proved to contain scattered and fragmentary shell. Some appears to be water worn, but other pieces are midden refuse. The amount of shell per sample never amounted to more than approximately 6 per cent of the total, and it was not possible to find significant differences between layers in types of shellfish utilised.

Other materials recovered from the limited 1962 excavation tended to confirm the conclusions already arrived at on the basis of distribution. Thus layer II in Square 0-1 produced bottle glass, a drill point, and adze flake, and five obsidian flakes (4 grey and 1 green). Bone identified from this layer included pig, spotted shag, and the Polynesian dog. Layer IIa, underlying layer II, yielded an adze flake and some fragmentary bone that could not be identified. From layer III, four flakes of obsidian (1 grey and 3 green pieces), two pieces of stone files and a fish hook fragment were obtained. Identified bone includes the grey duck, spotted shag (?) paradise duck, Polynesian dog, seal bone and fish bone.

Another test in Square 0-12 at the other limit of earlier excavations yielded a moa tibia-tarsus, a human tooth, and the bones of dog, seal and spotted shag. There was also a ring bead cut from bird bone. Unfortunately the stratigraphy of this square did not tie in with that of Square 0-1, as was hoped, and so did not clarify completely the stratigraphy in the 1959 excavation (see fig. 3). The main cultural deposit seemed to be similar in composition to layer II, in Square 0-1, but rested directly on the natural subsoil. The failure to find evidence of layer III, or the black layer reported by Mr. Fisher in earlier excavations, may be explained by the fact that the exact position and alignment of the earlier excavations was hard to identify, and the Square 0-12 may not have been in the exact position shown in fig. 2.

## ARTEFACTS

For convenience description of artefacts has been subdivided according to materials in which they were manufactured. The description covers the artefacts recovered in the excavations of all three sea-

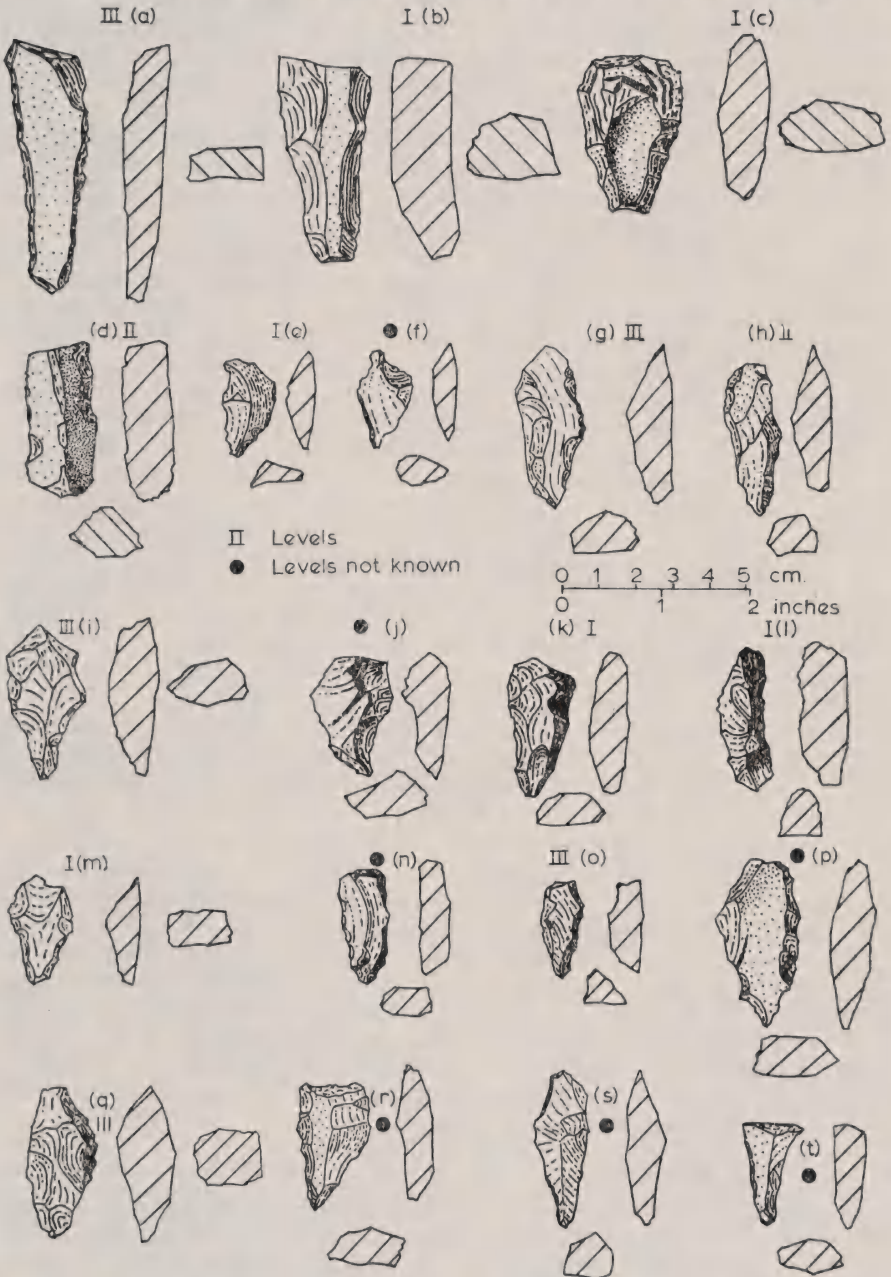


Fig. 4—A representative selection of flaked points (drills) with the levels from which they were recovered indicated. Points a-d are in basalt the remainder in chert-like material.



sons, and where possible the level and location of artefacts is given in the illustrations.

### Stone Flaked Points.

This site is notable for the number of flaked points that were recovered. These are commonly called drill points, although as Lockerbie (1953 p. 28) has noted "not all specimens so classified were used for the purpose of drilling." Of the 61 flaked points found six were made from a basaltic stone and the rest from various types of chert-like material. Considering the number of points in these materials it is surprising that only one core and a few waste flakes of similar materials were found. Small numbers of the flakes show signs of use along one edge.

The 'drillpoints' were in all cases made from flakes, which have been retouched along two edges, converging to a point. For descriptive purposes they fall into two broad categories, based on the process employed in retouching and I am grateful to F. W. Shawcross for pointing out this method of description. There are 35 drillpoints retouched on both edges from the ventral surface, while 26 are retouched on one edge from the ventral, and on the other edge from the dorsal surface. This results in two somewhat distinctive cross-sections, although they do not provide watertight categories. The first technique tends to result in a cross-section with a flattened dorsal and ventral surface and steep sides, the dorsal surface being slightly wider than the ventral surface. The second technique results in a more complete modification of both surfaces, giving a diamond-shaped cross-section. (Fig. 4). Most of the 'drillpoints' are 20 to 46 mm. in length, and 8 to 25 mm. in breadth, although some of the points in basalt are larger. It is probable that among the shorter drillpoints some have been broken. The widest point is usually from half to two-thirds of the way along the artefact from the point. Of the 55 points that were probably not broken, 28 had their widest point in this area, 15 had their widest point at the end opposite the point, four had no place that could really be designated as the widest. The remaining eight either had their greatest width near the point, or more than two-thirds of the way toward it.

In fig. 4 points a-d are made of basalt and exhibit secondary working from the ventral surface only. The remaining points illustrated are in chert-like material. Among them points j and p-t possess a cross-section typical of those with secondary working from both sides, while points g-i and k-o, show the working from one side only. Point j is an example of a type, of which there are two or three in this collection, where the shaft is distinctly curved, in a manner that seems to preclude its being hafted in the manner suggested by Buck (1950, p. 194). Flaked points that seemed not to have been drills are illustrated in e and f. These chert tools have been retouched partway along the sides and have pointed tips at both ends.

### Adzes and Roughouts.

Of the adzes and roughouts recovered only one, a broken roughout from level III, shows pre-extensions of ever having been more than about four inches in length (Fig. 5, e). This broken roughout is much thicker in cross-section than the others that were found, and is the only one that bears any sign of hammer dressing. Although very crude in form, its shape has more affinities with the hog-back or type 4 adze than with



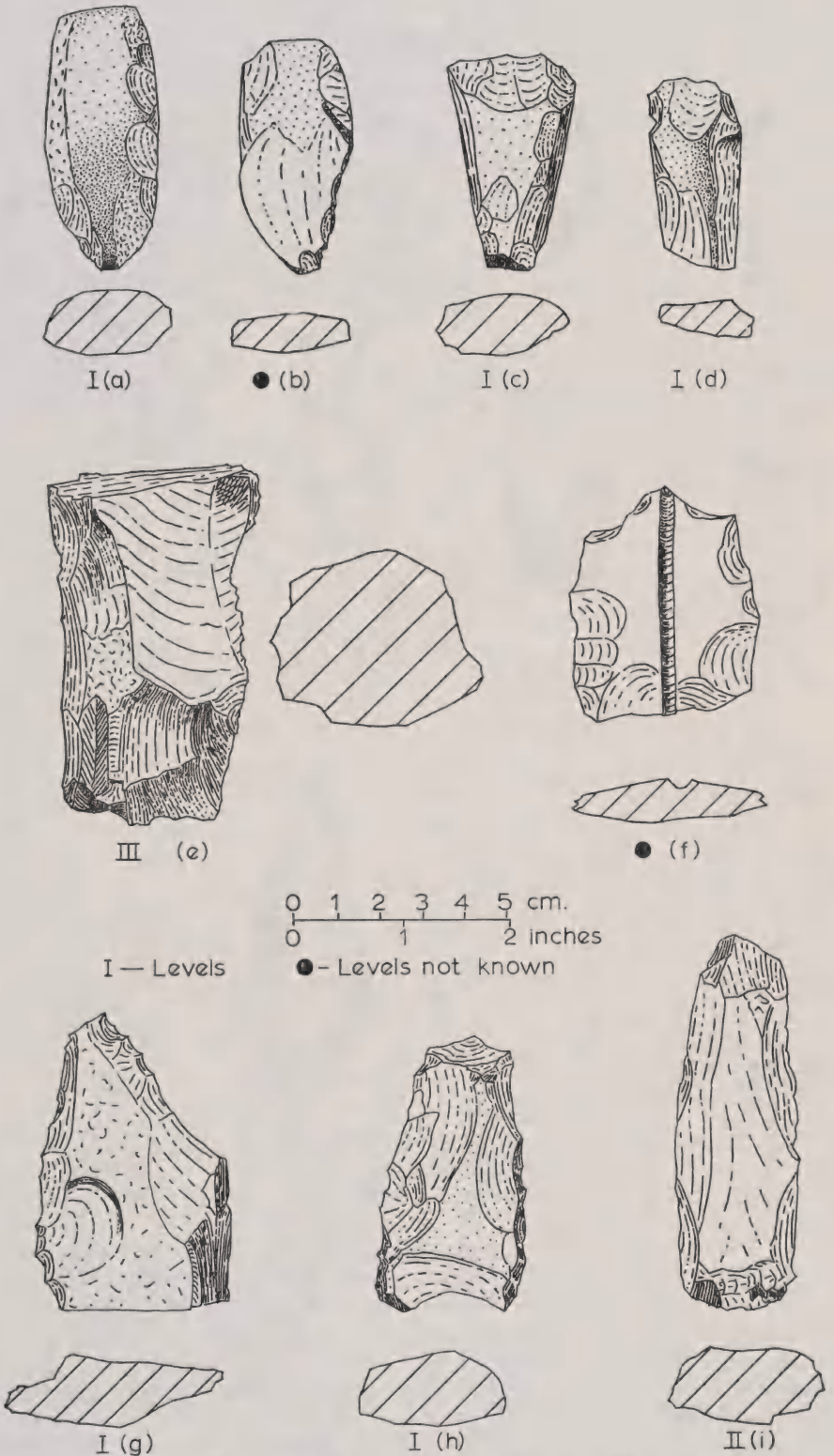


Fig. 5—A representative selection of adzes, roughouts and other stone tools. *a-d* and *h* are small flake adzes with some polishing, *i* is a roughout for same type of adze, *e* is a hammer dressed portion of a larger adze. *f* is a grooved stone, possibly for filling, *g* is a worked basaltic flake.

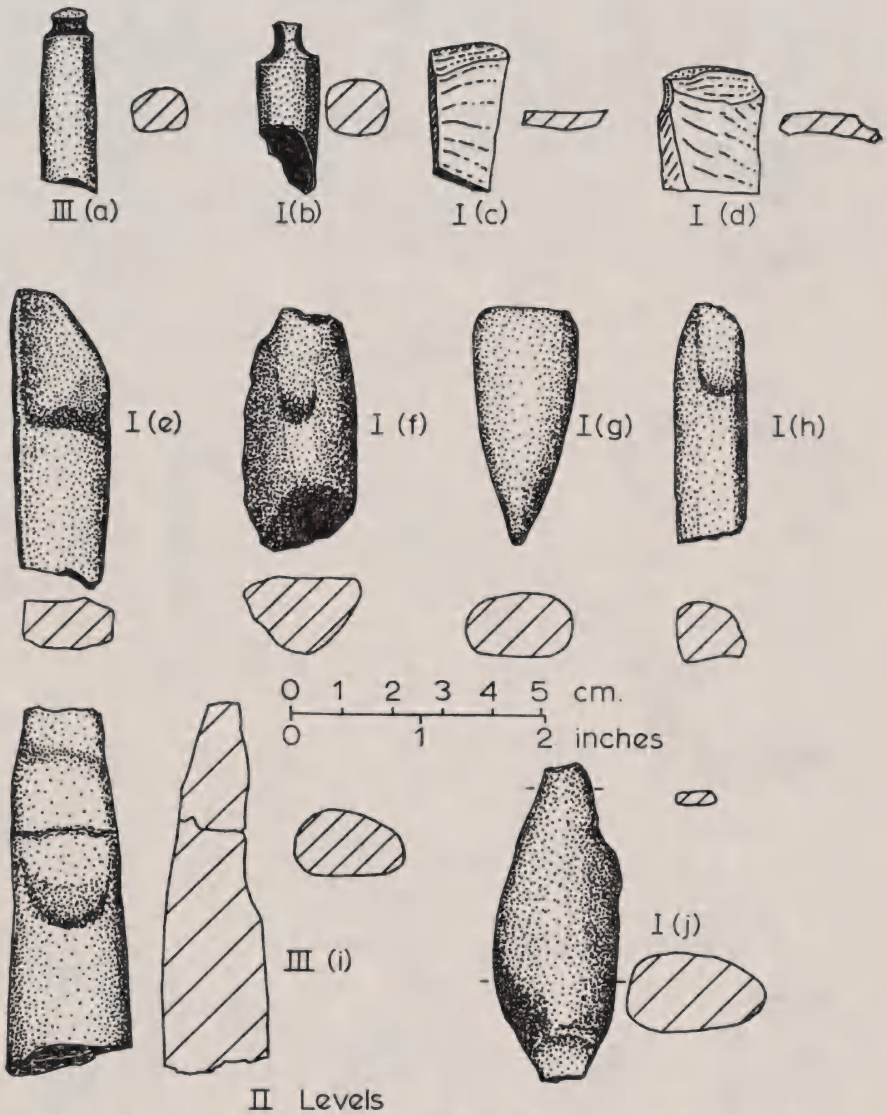


Fig. 6—Other stone artifacts: *a* and *b* are portions of stone fish lure shanks, *c* and *d* are two very small flake adzes with polish only on bevels, *e-j* are a representative selection of sand stone files.

any other. A smaller roughout in a much lighter coloured stone also has a shape like a hog-back or similar triangular type 4 adze. This roughout exhibits no sign of hammer dressing or polishing however.

The majority of the adzes are small, seldom polished and, if polished, only to a slight degree (Fig. 5, a-d, h). One probably has been reshaped from a larger polished adze with a 2B cross-section, but the reformed blade shows no sign of use (Fig. 5, c). All the others have certain of the following characteristics in common: they appear to have been formed from flakes, in cross-section they are irregular, and thin,

but tending towards a rectangular or plano-convex cross-section (Davidson 1961, p. 9), none are of a size greater than 10 cm. in length, and none show signs of hammer dressing. Two of them are little more than 3 cm. in length (Fig. 6, c-d). Most of them show traces of polishing on raised areas, and all along the bevel of the blade, while on some, slight traces of polishing also appear along the sides, again to smooth off protruberances. The impression one gains is that these

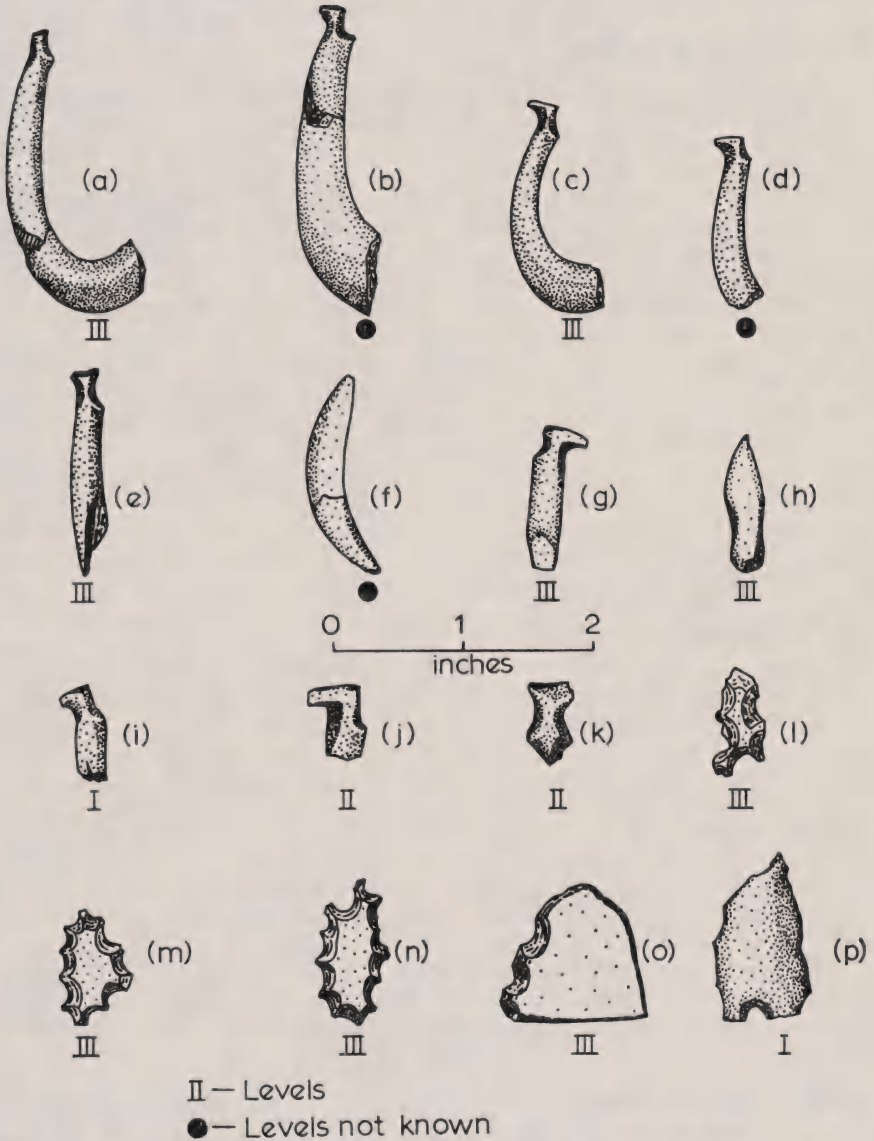


Fig. 7—Bone items largely fishing gear; *a-e* are broken one-piece fishhooks, *f* is a worked dog tooth, *h* is a dog tooth fashioned into a point for a composite hook, *g* and *i-k* are heads from one-piece hooks, *l-n* are cores from the manufacture of one-piece hooks, *o* is a blank with a sharp blade edge, *p* is a deliberately pointed bone.



are completed tools and that they maintain some consistency in their pattern of manufacture. This impression is strengthened by the existence of five stone flakes shaped to the form and proportions of these adzes, which could not have served as roughouts for the better made and formally recognised adze types (Fig. 5, i).

A number of flakes from adzes were found, both polished and hammer-dressed, but none is large enough to permit even a tentative identification of type adze to which it belongs.

### Other Stone Artefacts.

- (a) A number of basaltic flakes in irregular shapes show signs of use along one or more edges. In some cases this is merely a series of chippings on a fairly sharp edge, but one or two show a very steep flaking along one fairly thick edge (Fig. 5, g).
- (b) A piece of stone (shown in fig. 5, f) has a groove formed on a thin flake of crumbly rock, which seems unsuitable for adze-manufacture. The surface of the stone in the vicinity of the groove is also polished and scratched, but no signs of working appear on the other side. It is possible that it was used for filing purposes.
- (c) Stone files. A number of files, all of them broken, were recovered, along with a piece of similar stone in the process of being divided. All the files were made of the same sort of material—a very rough, porous sandstone. They cover a wide range of shapes, of which a representative selection is illustrated (fig. 6, e-j).
- (d) Two broken stone fishhook lures were also found (fig. 6, a-b).
- (e) About 60 per cent of the obsidian flakes show signs of use along one or more edges. None of the flakes show use on hinge-fractures (Shawcross 1963:52). The flakes are all fairly small, and no cores are present in the collection.

### Bone Fishhooks.

The most numerous bone artefacts recovered are those concerned with fish-hook manufacture. As well as cores, blanks and unfinished hooks which indicate the manufacture of fishhooks at the site, there are a number of finished broken fishhook shanks which indicate that fishing was a major activity. The principal forms are illustrated in fig. 7, a-e, g, i-k. Unfortunately no points belonging to this type of hook were found suggesting that hooks broke while fishing, but the broken hook was not discarded until the fisherman returned to the site. However, one point (fig. 7, h), presumably made from the canine tooth of a Polynesian dog, must be a point for some form of composite hook. Other kurii teeth (fig. 7, f) also show signs of working. Most of the shaped bone "blanks" seem to have been found in level III, and the majority are manufactured from the porous bone identified as whale or seal. Hooks and cores however, appear to have been scattered through all three levels.

### Other Bone Artefacts.

- (a) In addition, a number of pieces of bone appear to have been fashioned to points (fig. 7, p.) and served as piercing tools. These are made on flat or slightly curved pieces of bone, and have a deliberately fashioned point but no other sign of finishing or smoothing.



- (b) Another piece of bone has been filed to form a fairly sharp blade along one edge (Fig. 7, O).
- (c) Finally, the excavations in 1962 produced a small ring in bird-bone from layer II.

## SUMMARY AND CONCLUSIONS.

Definite conclusions concerning this site are difficult to draw owing to apparent disturbances that mixed different layers. However, a general pattern does seem to emerge. The first occupation seems to have been predominantly for fishing and hunting. This is supported by a large concentration of fish-bone, and a high percentage of the birdbone associated with this occupation, and a number of fishhooks. In addition, in the very first year's excavation, a large whale vertebrae was found resting on the natural sand, and level III yielded a number of worked fragments of porous cetacean bone.

Following this occupation, some at least, of the pits and ovens occur, and are probably in part concurrent with the later occupation which left the large numbers of stone flakes, and the small adzes described above.

As this is one of the few flat areas on the island it is reasonable to assume that it would have been used for agriculture. If so, the disturbance due to this and/or other causes may have resulted in a mixing of the early "fishing" occupation and later ones. This would account for some of the bird and dog bone that appears in levels II and III but does not extend into level I in any quantity. However it could also be that this occupation does not coincide with the earliest fishing layer, as the distribution of the fishing material is not identical with that of the bird and dog bone. This would mean that the earliest occupation was strictly a fishing community, with bird and dog bone which imply hunting as well, appearing later.

After the "stone flake" occupation or possibly in its later stages European contact material occurs. Again it would seem that early contact agriculture, possibly gumdigging, and later ploughing as well, has mixed any former stratification.

It is difficult to know where the chert-flakes and 'drillpoints' fit in this interpretation. For neither of these items is the distribution statistically significant, so one may assume either that they were in use over a wider range of time than other materials, or alternatively that their distribution originally coincided with the bird and dog bone, but has been upset owing to subsequent agricultural disturbances in which the stone has survived better than the bone. In this context it is noticeable that the bone tends to become more fragmentary in the upper levels. In any case, the chert and 'drillpoint' distribution differs from that of the adze flakes, stone flakes and obsidian. If the assumption is made that the 'drillpoints' and chert coincide roughly with the bird and dog bone, the picture that emerges would be:

- (a) Occupation in which European contact material occurs in mixed deposits that approximate to level I but on occasions extend into level II.
- (b) Occupation in which stone flakes, adzes and obsidian flakes predominate. The large shell mounds nearby may be associated with either this occupation or the one above. The occupation probably

coincides with the upper six inches of layer II before subsequent activities obscured the stratification.

- (c) Occupation in which bird and dog bone predominates and at which time at least some of the pits and *haangi* were made. There is some evidence for fishing and it seems likely that a majority of the chert and 'drillpoints' are to be placed here. This occupation includes most of level II and an indeterminate part of levels I and III. It is possibly coterminous with the lower part of layer II.
- (d) A fishing occupation with fish, whale, and other porous bone in which most of the fishhooks and items associated with their manufacture are to be found. This occupation includes all of level III and portions of the lower part of level II. It probably coincides with layer III.

This division is in terms of *quantitative* distribution and concentrations only, and it is not meant to imply that the materials named are confined exclusively to the one occupation. The proposed separation does not provide much correlation between the distribution of flaked points, sometimes called drills, and the fishhook bone material that is normally assumed to have been worked with them. However, the distribution in Table I does not indicate that there was much correlation either and it may be that our functional interpretation is in error. Also the relatively small amount of worked bone to the large number of 'drillpoints' does tend to suggest that they were used on a wider range of material.

Finally, possible datings for the sequence outlined above must be considered. One end of the time scale is anchored by European contact material. Unfortunately it has not yet been possible to definitely ascertain a date of manufacture for this material, although it is considered that the china recovered was more likely to have been manufactured in the earlier rather than the later part of the 19th century (V. F. Fisher, personal communication). No carbon samples were taken and obsidian dating has produced only general results that may be equated with sites dating to the 14th century or later. Green (1963, p. 54) assigned level and layer III of this site to the Developmental Phase in the sequence he outlined for the Auckland Province. For the next part of the sequence there are few good criteria for dating other than proportions of obsidian and the change from the evidence for hunting (excluding the moa) to its lack and the suggestion that agriculture may have been involved in the mixing of deposits. If the next occupation of stone and obsidian flakes and small flake adzes, lacking entirely in archaic forms, and providing none of the 'classic' 2B types, is assigned to any phase, it will likely be on the basis of these adzes, if they prove to be of more than local significance.

Green in personal communication says he would place this last occupation in the proto-Maori phase because it lacks any forms typical of archaic assemblages and exhibits no evidence for the former strong reliance on fishing and hunting, while indicating a strong possibility for agriculture in the nature of the small adzes more relevant to garden clearing than woodworking, which is in keeping with the postulated agricultural disturbances of the site. Also in his obsidian chronology for the area it seems likely that this level is to be placed in time with other sites also assigned to this phase. The final occupation Green (1963, p. 86) assigns to the Early European Maori phase.

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TABLE I  
Site N 43/1 — Distribution of material by level

<i>Item and Number</i>	Chi-square result	Level I— %	Level II— %	Level III— %
Stone flakes— 1325	P < .01	51	38	11
Adze flakes— 40	P.05 > .01	52	35	13
Roughouts for adzes— 8	—	75	12.5	12.5
Modified stone flakes— 10	—	60	20	20
Chert flakes— 251	P > .05	35	40	25
Drill points— 26	P > .05 (not significant)	52	27	21
Files— 7	—	60	30	10
Obsidian flakes— 326	See below	54.9	33.8	11.3
a. Grey obsidian— 122	P < .01	24.2	9.8	3.4
b. Green obsidian— 204	P < .01	30.7	24.0	7.9
Fishhook materials— 46	P < .01	15	23	62
Fish jaws— 105	P < .01	0	3	97
Dog bone— 57	P < .01	7	57	36

TABLE II  
Site N 43/1 — Distribution of identifiable bone

Common Name	Binominal Designation	Level I	Level II	Level III
Dog (Polynesian?)	<i>Canis familiaris</i>	X	X	X
Polynesian rat	<i>Rattus exulans</i>	—	—	X
Pig (European?)	<i>Sus scrofa</i> Linné	X	X	—
Albatross	<i>Diomedea</i> sp.	X	—	—
Shag	<i>Phalacrocorax</i> sp.	—	X	X
North Island weka	<i>Gallirallus australis</i> greyi	—	X	X
N.Z. pigeon	<i>Hemiphaga</i> n. novae-see-landiae	—	X	—
N.Z. tui	<i>Prothemadera</i> novae-see-landiae	—	—	X
Duck—N.Z. teal	sp. unknown	—	—	X
Moa	<i>Dinornis</i> sp.	—	X	X
North Island Kiwi	<i>Apteryx australis</i> man-telli	Position not known		